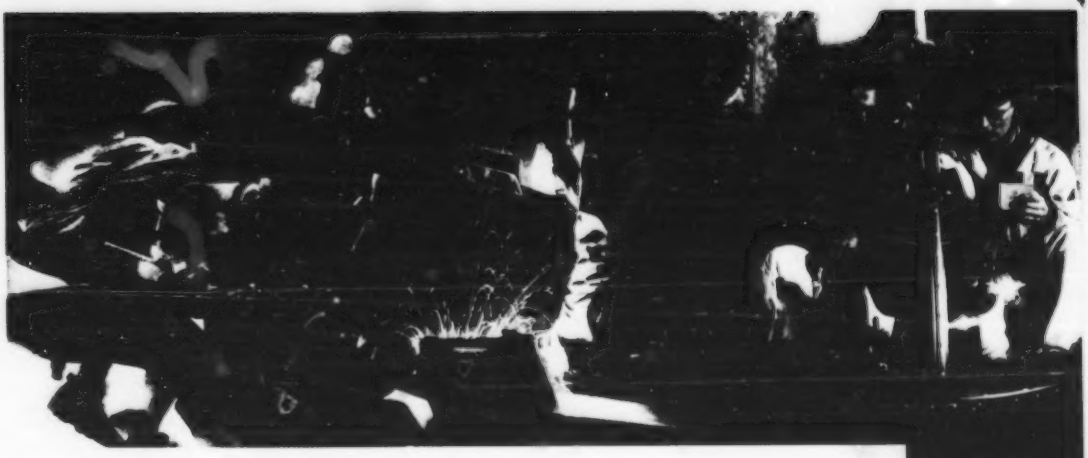

Ensuring a Skilled Workforce for British Columbia

A REPORT TO STIMULATE JOINT ACTION ON TRADES & TECHNICAL SKILL SHORTAGES

PREPARED BY
THE INDUSTRY TRAINING
AND APPRENTICESHIP
COMMISSION

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THE BOARD OF DIRECTORS of ITAC would like to acknowledge and thank the British Columbia Federation of Labour, the Business Council of British Columbia, the Coalition of BC Business, and the Ministry of Advanced Education, Training and Technology for their input during the development of this paper. The content of this paper is the responsibility of ITAC and, while the other groups agree with much of the paper, parts of it do not necessarily reflect the views of these groups.

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Executive Summary

ITAC agrees with Perrin Beatty, Michael Coughlin, John Davies, Ken Georgetti, George Hunter, Suromitra Sanatani, Tom Sigurdson, Jane Stewart, Jim Sinclair, Jerry Lampert, John Winter, Darcy Rezac and the Bank of Canada[1]. They have all raised alarm bells regarding skill shortages in Canada and British Columbia. Ms. Sanatani recently stated, "This issue deserves urgent attention."

The skill shortages crisis – An innovative, proactive strategy is needed in B.C. to head off serious skill shortages in trades and technical occupations in the coming years. This trend has already started and should be of concern to all British Columbians. Business, labour, government and education and training communities all need to take joint action now.

B.C.'s economy and society will be seriously harmed without joint action.

The Industry Training and Apprenticeship Commission (ITAC)[2], in conjunction with key business and labour groups and the provincial government, has prepared this report to stimulate dialogue and joint action on addressing trades and technical skill shortages in B.C., and to ensure the expected 700,000 new job openings between 1998 and 2008 are filled.

This report provides possible public policy and private sector solutions and suggests what ITAC, business, labour, education and training, and government can do to jointly address skill shortages. It is particularly aimed at business, workers and organized labour—labour market demand and supply.

The key policy question is what needs to be done to enable employers to hire and train more people—young people and existing workers—in trades and technical skills?

What is behind this issue? – There are three main factors at play in the increasing skill shortages trend:

- First, rapid growth on the knowledge-based side of B.C.'s economy is driving where next jobs are being created and where skill shortages exist or may emerge. High technology, aerospace and other advanced manufacturing industries, and oil and gas are examples; small business, generally, is a big job creator.

- Second, the aging of our workforce and the demographic realities will, by themselves, create serious skill imbalances in our economy.
- Third, without changes, our trades and technical training system will not keep up with labour market changes and growth.

These factors need to be considered within the bigger picture context of the global competition for talent and the systemic bias against trades and technical careers within Canadian society.

Nature and extent of the problem – Skill shortages are emerging across all key sectors of our province. They range from professions such as doctors, teachers and nurses and highly skilled technical workers to trades workers in both traditional sectors and emerging industries like aerospace and information technology. Increasingly over the last six months, groups like the Bank of Canada, the Canadian Federation of Independent Business, and the Canadian Labour Congress have called attention to this issue.

A key fact is that 60 per cent of projected new jobs between 1998 and 2008 are in trades, technical and skilled occupations—the 'intermediate' core of our workforce. While this report provides examples and lists of skills in short supply, perhaps the most important critical factors are a) having a nimble and responsive training system and strategy; and b) reflecting a new 'human capital' paradigm in which employers, individuals and governments do not reduce investments in training and development at the first sign of economic downturn.

The B.C. trades and technical training system – B.C. has a large, vibrant and diverse trades and technical training system consisting of university-colleges, community colleges, provincial institutes, private training institutions, community and non-profit trainers, and employer and employee training programs. ITAC is a central champion and standards-setter for industry training and apprenticeship and plays a leadership role with education and training providers. A key part of a strategy to address our province's skill needs involves partnerships and joint action. Such a strategy needs to be driven by employers and employees who best know the skills needed and how and where learning should be provided for maximum access and participation.

Challenges and barriers to training – This report is based on the premise that we cannot consider strategies for addressing trades and technical skill needs without first determining the barriers and challenges to doing so. The key barriers to employers and employees investing and participating in such training are:

- Costs of training—for both employers and employees.
- Accessibility of training programs by employers and employees.
- Lack of supports to individuals and businesses in accessing and sponsoring training.
- Collective agreement provisions which can make it difficult to hire and train young people and existing employees.
- Government regulations which can make it hard for businesses, particularly small businesses, to participate in training.
- Lack of awareness among employers and employees regarding trades and technical training and career opportunities and support.

Options for addressing barriers - After carefully considering other jurisdictions, B.C.'s experience, and feedback from industry groups, ITAC has identified the following most plausible options for responding to skill shortages in trades and technical occupations:

- A 'human resource investment' tax credit for employers and individuals who invest in work-related learning.
- Direct financial incentives to employers and individuals to stimulate investments in work-related learning.
- Sectoral initiatives in which employers and employees, and often educators and government, work jointly to address an industry's skill needs.
- More flexible regulations to facilitate entry to occupational training and certification.
- More flexible training programs like distance education, e-learning, and modularized learning to facilitate employer and employee participation.
- Collective agreement provisions where employers and unions can work jointly on the skill shortage issue in their establishment and industry.

Next steps on skill shortages - In addition to identifying and modelling 'best practices' in trades and technical training, ITAC has identified what it, business,

labour, government, and educators and trainers can do to address skill shortages in both the short and long terms:

- ITAC will double its training opportunities from 25,000 to 50,000 in the next five years and will increase the flexibility of its policies and program standards."
- Business can develop sectoral strategies and set targets for training trades and technical workers.
- Workers and organized labour can make training more of a priority in agreements with employers.
- The provincial government can introduce new, innovative public policies to stimulate more training investments.
- Educators and trainers can develop more industry partnerships for trades and technical training.

We also need the federal government to help us respond to the serious skill shortage problem. And it doesn't stop here. Parents, teachers, and others also need to play a role in the longer term to encourage stronger valuing of non-unversity careers and learning.

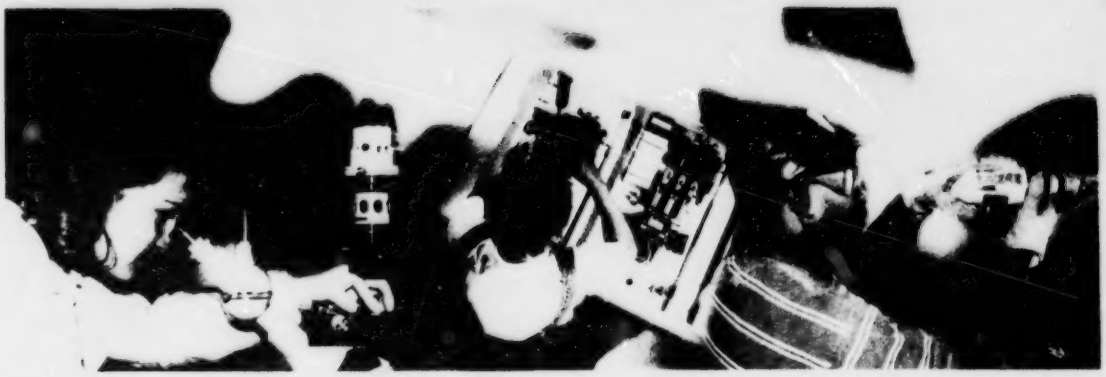
Without strategic and joint action, thousands of good jobs will go begging and business productivity and growth will be stifled due to skill shortages in trades and technical occupations.

ITAC has developed an 'action plan' to help chart and track responses to the skill shortages. See *www.learnandearn.bc.ca/whatsnew/press.htm*

END NOTES

[1] Perrin Beatty is President and CEO of the Canadian Manufacturers and Exporters; Michael Coughlin is President and CEO of Acro Aerospace and the Aerospace Industries Association of B.C.; John Davies is a practicing millwright and long-time trade union member and apprenticeship champion; Ken Georgetti is President of the Canadian Labour Congress; George Hunter is Executive Director of the B.C. Technology Industries Association; Suromitra Sanatani is President of the Coalition of B.C. Business and Vice-President for B.C./Yukon Region of the Canadian Federation of Independent Business; Tom Sigurdson is President of the B.C. and Yukon Building and Construction Trades Council; Jane Stewart is Minister of Human Resource Development, Government of Canada; Jim Sinclair is President of the BC Federation of Labour; Jerry Lampert is President and CEO of the Business Council of B.C.; John Winter is President of the BC Chamber of Commerce; Darcy Rezac is Managing Director of the Vancouver Board of Trade.

[2] See www.learnandearn.bc.ca for information on ITAC.



1. *The trades and technical skill shortage crisis in B.C.*

'HUMAN CAPITAL' is the single most important resource for British Columbia's future. An innovative, proactive strategy is needed in B.C. to avert serious skill shortages in trades and technical occupations[1] within the next five years. This trend has already started and should be a concern of all British Columbians. Action must be taken *now* by B.C.'s business, labour, government and education and training communities.

Every week we hear about or experience first hand, shortages of people in a broad array of occupations, from nurses to aerospace technicians and high tech engineers to construction tradespersons. Much attention has been on university-level training, however, there will also be equally threatening shortages in trades and technical jobs. Why is this a critical issue for our economy? What is behind it? And what can we do about it?

Over the coming decade, British Columbia will face a serious challenge, with economic growth and the aging of our workforce creating 700,000 job openings by 2008. Many of these will be skilled trades and technical jobs. Shortages are prohibiting growth and diversification in certain industries, and jeopardizing the competitiveness and productivity of businesses. Skill shortages also mean missed opportunities for individuals.

The Industry Training and Apprenticeship Commission (ITAC) is evolving into an industry-driven, arms-length public agency that oversees training and certification for over 27,000 apprentices, students and workers this year. Key business and labour groups and the provincial government asked ITAC to prepare a report on trades and technical skill shortages and options for addressing them to encourage discussion and development of policy options.[2]

PURPOSE AND SCOPE

This paper aims to give stakeholders and the public a better understanding of B.C.'s trades and technical skill shortage crisis. It also describes the barriers limiting employers and workers from investing in more training.

What's different about this report? This paper identifies some public policy and private options for addressing the skills shortage problem. It ends with the actions ITAC, business and labour, and government and educators and trainers could take in the short and long term.

Since ITAC's mandate is training, this paper's scope includes only possible training-related solutions, and not other types of actions to address shortages (e.g. immigration, work re-organization).

The report focuses on the 'demand' side of the skills shortages problem—that is, how we can get more businesses and employees to participate in industry training and apprenticeship. There is also a big challenge on the 'supply' side in order to get young people and those who influence them (i.e. parents, teachers, the media, etc.) to be interested in pursuing high-paying, high-skilled non-university careers which have traditionally been under-valued. This is being addressed by ITAC and others, but is not the focus of this paper.

While this paper includes government, educators and trainers as partners, it particularly underlines the critical need for action, particularly by businesses, workers and organized labour.

2. *Factors driving the skill shortage problem*

DURING MUCH OF THE PAST DECADE, Canada's economy has been strong. In the last two years, Gross Domestic Product (GDP) grew four to five per cent annually. Most economic forecasters expect growth to continue at a more modest rate, gradually settling to around two per cent by 2005.

B.C.'s economy has also been growing, although at a slower pace than the country as a whole. Still, B.C.'s GDP increased by almost three per cent last year, and many analysts are expecting the province to outperform the

national average by 2002. While economists disagree on how B.C.'s economy will fare over the next few years, there is consensus that skills shortages will be a problem if we do not act now.

While growth has been particularly slow in core industries like forestry and mining, B.C.'s economy has been diversifying. The high tech, oil and gas, and manufacturing sectors have led the way in expanding B.C.'s economic base. In the 1990s, almost 98 per cent of new jobs were created in the service sector, ranging from tourism to professional and financial services, and this sector now accounts for nearly 80 per cent of all jobs in B.C. Most of this growth is concentrated in small businesses in these sectors. Jobs in this area often require post secondary education or a high level of specialized technical training and certification.

The face of the B.C. workforce is also changing. Here and globally, the labour force is aging and many workers are approaching retirement. Meanwhile, birth rates are decreasing and the number of people retiring will soon exceed the number of young people entering the work force. Even with increases in the number of working women and higher immigration levels, economists believe that by the end of this decade, the work force will have stopped growing and B.C. will lose more workers each year than it gains.

More British Columbians are retiring with fewer workers ready to take their places. Trades and technical jobs, where employers rely on a well-trained and highly skilled labour force, will be hardest hit. Thus, while steady and diversified economic growth is good news, combined with our demographics, it is putting pressure on B.C.'s labour supply. In addition to the aging of our population, key issues include:

- Widespread growth globally means that skilled workers are in high demand. It is becoming more difficult for B.C. employers to attract—both internally and externally—and keep skilled workers.
- A more diverse economy means workers need skills in new areas. A training gap exists as the number of skilled workers cannot meet the demand for their services.

- Many young people are bypassing non-university trades and technical careers, meaning missed opportunities and shortages in dynamic growth sectors like information technology, aerospace, high tech manufacturing, and motion picture and new media.
- Jobs in new sectors often require high level training, yet the support system for this training is not in place.
- Small business skills and 'soft' skills are becoming increasingly important, and have significant implications for existing and new training programs.
- Assessment and recognition of the skills of new Canadians and other experienced workers will be increasingly important.

Right now, there are significant skill shortages in some industries. And soon, every sector of the economy will be affected. Across the board, business, labour, private researchers, educators and government agree that 'human capital' is the single most important factor in ensuring the long-term health of B.C.'s economy.[3]

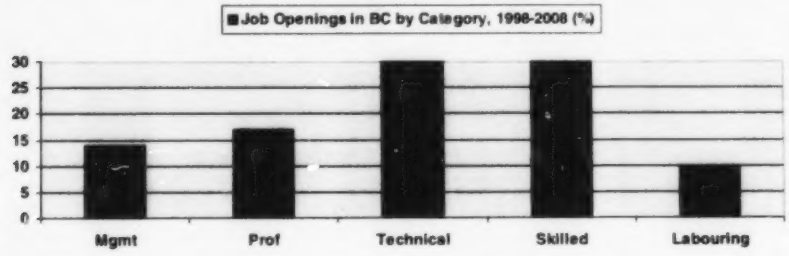
3. *Jobs and skills in short supply in B.C.*

At present, skills shortages are limited to specific occupations and sectors but there are already warning signs of broader skills shortages to come. The Bank of Canada recently reported skill shortages in information technology, construction, health and social services, and manufacturing. A recent national Canadian Federation of Independent Business survey found 46 per cent of small businesses found skill shortages to be a problem, representing 300,000 jobs sitting empty.

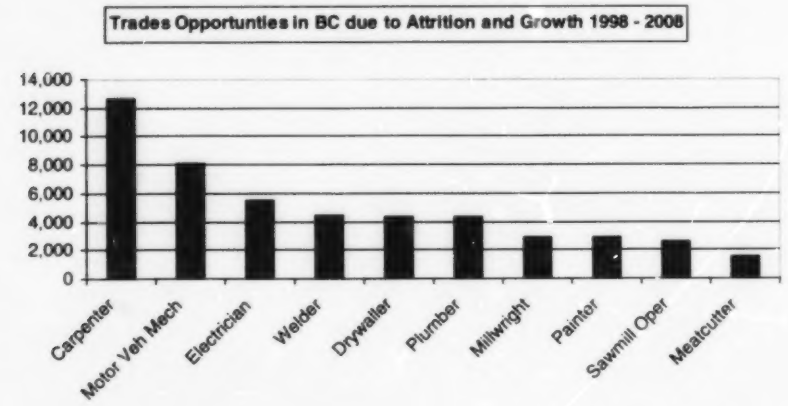
In B.C., industry reports a shortage of electricians in the Lower Mainland, and an urgent need for millwrights across the province. Right now, the province needs 500 ironworkers, while the aerospace industry will need up to 4,000 new trades and technical workers within five years. Then there's high tech, where growth is being held back by a global skills shortage. Further, in its most recent national survey, the Canadian Manufacturers and Exporters found skills shortages to be the number one concern (78 per cent) of its members.

Recruiting skilled workers from other countries is a limited option for B.C., as international demand grows more intense. Unless we take action now to recruit and train young people, skill shortages will only become more acute and widespread.

As indicated earlier, the 'aging' workforce will hit many of the traditional trades and technical areas hard, and this has to be factored into the anticipation of where action is needed. As the population ages and less young workers enter the workforce to replace them, serious shortages in many trades will appear. Trades facing the most serious problem include electricians, millwrights, heavy duty mechanics and plumbers.



The chart below shows that 60 per cent of the new jobs in B.C. in the coming years will require workers with some technical or intermediate skills training. Only 11 per cent of the job openings will be available for people without such training and about 30 per cent will require some form of university training.



Increasing skill shortage pressures will be seen in both traditional and newer emerging industries and jobs. The causes and solutions may be different in traditional and emerging sectors but, clearly, industry training and apprenticeship and occupational certification need to play an important role in all trades and technical areas. The table below shows the top demand occupations in traditional apprenticeship occupations.

For example, B.C.'s high tech industry currently employs 52,000 people and that is projected to increase to 70,000 by 2005. Province-wide there are thousands of unfilled high tech positions and this 'skills bottleneck' seriously restricts growth.

An analysis by CCG Consulting Group presented at the B.C. Business Summit in November, 2000, identified the importance of exports for significant GDP and employment growth and skill requirements. The top export growth sectors were oil and gas, technology and non-resource manufacturing—all of which are experiencing skill shortages.

According to 1999 projections[4], the largest number of job openings over the next ten years will be in the following categories which could be addressed via trades and technical training:

- Sales and Service Occupations
  – Approximately 180,000 openings.
- Trades, Transport and Equipment Operators and Related – Over 90,000 openings.
- Natural and Applied Sciences and Related Occupations – Over 40,000 openings.
- Occupations Unique to Processing, Manufacturing
  – Almost 25,000 openings.
- Occupations Unique to Primary Industry
  – Approximately 15,000 openings.

Last year, looking five years into the future, labour market analysts identified the following "High Opportunity Occupations in B.C.":[5]

- Managers in Accommodation, Food and Retail.
- Professional Engineers.

- Computer Systems Analysts and Programmers.
- Registered Nurses.
- Social Workers and Community and Social Service Workers.
- Assisting Occupations in Graphic and Digital Arts, and Technical Occupations in Motion Pictures, Television and Theatre.
- Graphic Designers & Illustrating Artists, and Artisans & Craftpersons.
- Technical Sales Specialists and Representatives, Wholesale.
- Chefs and Cooks.

Skill shortages and occupational growth patterns can fluctuate according to economic cycles and market shifts, but the key is having a long-term skills strategy and a training system that can adapt and respond in a timely manner. We also need to take an approach to human capital investments where training and development are not the first expenditures to be "chopped" at the first sign of economic slowdowns.

4. *B.C.'s trades and technical training system*

Trades and technical training programs[6] are industry-based education and training models involving a combination of structured practical and theoretical learning in trades and technical occupations, usually tied to some type of certification or credential. Learners in many work-based programs alternate between in-school training and the workplace. The majority of this training is delivered by the province's public post-secondary institutions, but an important role is also played by private institutions, employers, trade unions and community service providers. Self-study and e-learning are increasingly important methods of skill development.

ITAC plays a leading role overseeing and promoting work-based training in British Columbia. It is mandated to create relevant and responsive training programs, support B.C.'s labour market, and help to ensure sufficient numbers of skilled trades and technical workers necessary to sup

port B.C.'s economy. Overall, ITAC has a responsibility to create and promote a vibrant 'system' of trades and technical training in B.C.

The core of B.C.'s formal industry training and apprenticeship system overseen by ITAC consists of over 27,000 apprentices, trainees, students and workers:

- Over 16,000 apprentices, including 700 high school students.
- 5,700 entry-level trades training students.
- 4,200 tradespeople engaged in skills upgrading.
- 1,000 individuals participating in other formal industry training.
- 500 individuals in programs for under-represented groups.

Trades and technical training need to be considered in the context of the broader provincial post-secondary education system. This includes a large infrastructure and resources with thousands of administrators and instructors in twenty public institutes, and several union and joint management-labour training boards, private training institutions, and employer training facilities. B.C.'s public post-secondary education system alone serves almost 200,000 full-time students (including universities) and many more part-time and continuing education learners.

Therefore, public and private institutions are the key deliverers of industry training and apprenticeship, and must be part of any strategy to address skills shortages. In addition to ITAC's core programs, these institutions deliver millions of dollars worth of other vocational, technical, continuing education, and upgrading programs for thousands of individuals, often in conjunction with industry and professional groups. ITAC's 'added-value' in the broader system is its mandate to set provincial training standards and designate new trades and occupations. It also strives to ensure programs and activities are linked to/laddered with this broader system.

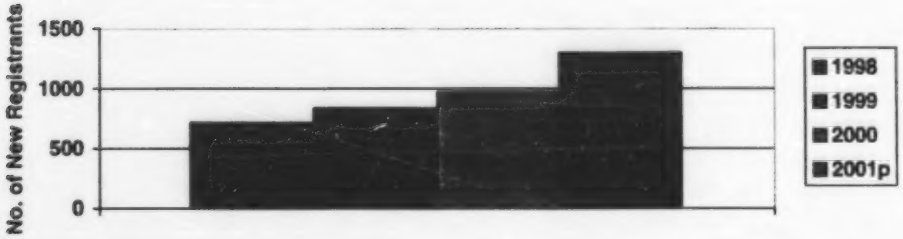
The industry training and apprenticeship system is evolving to meet the needs of B.C.'s changing economy. In the 1970s and 1980s, its work was focused on trades apprenticeships in construction (plumbers, carpenters, electricians), automotive and mechanical trades (millwrights, heavy-duty

mechanics), and metal work (boilermakers, ironworkers, welders). While growth in these areas has been slow, a trend which economists expect to continue, very high attrition is expected due to an aging workforce which will result in 100,000 job openings in traditional trades this decade.

In addition to addressing needs in traditional construction trades, trades training has recently grown in B.C.'s emerging knowledge-based service industries.

ITAC is working with B.C. post secondary institutions to respond to the service sector's need for training and occupational certification in new areas. In fact, apprenticeships in B.C. are at their highest levels since the early 1980s, thanks in large part to ITAC and institutional efforts to reach out to new trades. Film production is a good example. Grip apprenticeships have increased 1,847 per cent over the last five years; set dressers, 425 per cent; and 3rd assistant directors, 241 per cent.

Apprenticeship growth in BC's emerging sectors: aerospace, film and hospitality



Traditional trades have averaged about three per cent growth over the same period. This does not mean these trades are no longer important; they are still the bread and butter of apprenticeship. But the growth potential is much smaller than in emerging sectors economy, and to remain relevant, ITAC must keep pace. It must continue to serve the existing trades, while providing structure and expertise to meet the training needs of new occupations.

Industry training and certification needs to be quickly developed to respond to the tremendous growth and skills shortages in B.C.'s high technology industries, particularly information technology, biotechnology, new media, aerospace and electronics manufacturing. ITAC's mandate includes working on this while expanding and enhancing trades training.

A great challenge to increasing the role of trades and technical training in B.C. will be marketing. According to a 1998 B.C. Ministry of Education survey, 81 per cent of senior high school students planned to get a university degree or college diploma. Less than four per cent wanted to become apprentices, while three per cent were opting for job training programs. Clearly, these young people did not place a lot of value on trades and technical training. ITAC is addressing this through a 'youth marketing and awareness' strategy, but will need support from others.

Another key part of B.C.'s industry training and apprenticeship system are employers and employees themselves. Many employers, small and large, across sectors, invest in and/or provide employee training[7]. Small businesses, for example, have produced a majority of B.C.'s apprentices in the last decade. The patterns of such training change with business cycles, economic growth, market changes, and global trends.

Patterns of individuals' participation in work-related learning also vary as a function of many factors. For example, those employees with higher incomes and higher skill and education levels tend to have significantly greater access to adult learning in Canada.[8]

The intention in this is not to debate whether or not employers and employees already invest in training. This is a long-standing debate that is a subject unto itself. Rather, part of the purpose of this paper is to present options for companies and sectors who may need to increase investments and participation in employee training, whether it's large business, small business, or public sector employers.

Despite its challenges and need to improve, B.C.'s trades and technical training system must be a key part of a provincial skill shortage strategy in traditional and new sectors.

5. *Challenges and barriers to addressing skill shortages*

An important solution to the looming skill shortage is to train workers now. Therefore, training challenges are the focus of this paper. But first, B.C. must address some serious issues. Most important are those barriers stopping employers and young and older workers participating in trades and technical training programs.

Compared to other countries, Canada ranks very low when it comes to investments in formal in-company training, however this varies widely by industry sector and company size. In the past, employers have resisted mandatory training programs, but have been much more open to voluntary measures such as training trust funds, sector-based partnerships and wage subsidy programs.

Of course, there's no simple way to explain why some Canadian employers don't support work-based training. Individual employers, labour and economists all have their own theories, which vary by sector and region. Employers, individuals, trade unions, government and training institutions all need to ensure employee training stays on top of the priority list. However, there are some general issues that concern both employers' and employees' investment in work-based training.

ISSUES FACING EMPLOYERS

Costs. There are several direct and indirect costs for employers. Not only must they cover direct training costs of supervision and study materials, but they can suffer reduced productivity and competitiveness. Over the duration of industry training and apprenticeship programs, a significant portion of the employee's time is spent in on-the-job training.

Fear of lost investments. In the face of the competitive labour market, employers risk losing their highly-skilled employees to other companies. In some cases, this makes employers less likely to invest in training.

Time. Many employers are facing skills shortages now, and are not prepared or able to wait while they train new employees; however the time to plan and train new and existing workers, including trainers', supervisors' and journeypersons' time to oversee training, is often a barrier.

Program design and delivery. Many employers and workers find that training delivered from a central location, on a fixed timetable, is difficult to follow, and may not reflect the realities of the work environment. They call for more innovative, flexible training by post-secondary institutions. Industry also wants to ensure program relevance and quality.

Administrative Constraints. Some employers claim that provisions in collective agreements constrain them from hiring and training appren

tices and other new employees. Also, many small businesses claim that government regulations such as apprentice ratios and wage rates make it difficult for them to hire and train new workers. Collective agreements, or ITAC policies, can also create cost pressures.

Awareness. Some employers may not be aware of how to hire and train apprentices, and may not have the infrastructure to support a training program.

ISSUES FACING POTENTIAL AND EXISTING EMPLOYEES

Costs. Apprentices and other workers-in-training face lost wages, living and travel expense, and must pay for tools and equipment, study materials and specific training and course fees.[9]

Accessibility. Potential workers may not have training programs available in their area, and may be unwilling or unable to relocate without financial support.

Basic support requirements. Potential workers may lack the basic skills or language to be able or eligible to join a training program. Many members of groups under-represented in the workforce experience significant barriers to formal learning, and require special supports to be successful in such programs.

Awareness. Many potential workers are not aware of the training, funding and upgrade options available to them. Others do not have an accurate understanding of the job market, and may not be aware of job opportunities.

While businesses and labour, government, and various industry sectors do not unanimously agree on this list of 'barriers,' they are the ones most frequently identified by employers and workers. While public policies and private practices need to respond to perceptions, more analysis and consultation is needed to empirically confirm the importance of these barriers within various sectors, occupations and regions of the province.

6. Solutions for addressing skill shortages

Everyone agrees on the need to address B.C. skill shortages, but no one has a simple solution to deal with the barriers facing trades and technical training. This section offers some potential solutions, with the aim to stimulate discussion and, ultimately action. For further analysis and summary, read *Options for Increasing Investments in Work-Based Education and Training* (Rubenson and Schuetze) on the ITAC website.

One of the key principles offered in the Rubenson and Schuetze paper when considering investment options to support work-based training was, "he or she who benefits, should pay." While in principle, many ITAC stakeholders agree with this, there is disagreement over how much employers, individuals and others contribute toward such training now. ITAC plans to complete and publish a short study of 'who pays for and who benefits from what training now' in the near future.

Since the focus of this paper is to find ways to encourage employers to expand their training of employees, this section pays special attention to incentives that might appeal to B.C. businesses and individual workers (both potential and existing). While this is the focus, we cannot lose sight of the importance of retraining and lifelong learning among existing employees.

Three factors should be underlined when considering the following options. First, each sector and region in B.C. will have its own needs and its own preference as to how to respond to skill shortages and strategies to employ. Second, business and labour both agree in principle on the need to increase 'flexibility'; however the consensus breaks down when defining the 'how' of what this means. In order to find measures that can be applied across the whole economy, business and labour may need to find 'trade-offs' or 'middle-ground in executing more flexibility. Third, in addition to considering options for increasing training resources, ITAC and its partners need to ensure existing resources are well-spent.

'Human resource investment' tax credit. This strategy gives employers a tax credit for investing in employee training programs. For government, tax credits are easier to administer and less expensive than grants or loans. They're also easier for businesses to process and manage, and don't require a lot of paperwork. These tax credits could easily be built into ex

isting tax deductions by allowing an employer to reduce the Corporate Capital Tax or increase tax deductions in other areas.

Direct financial incentives. Government could offer cash incentives to companies that support worker training programs. Even a small grant could help cover some training costs and reward the employers' efforts. There is a model in place in a successful program in which B.C. employers get a cash grant when they hire and train people on income assistance. While these kinds of programs are harder to manage than tax credits, they would be much easier to get started.

Sector-specific initiatives. These are incentives that target specific industries. The Federal Government supports sector-specific incentives, usually organized around national industry councils. Employers like these councils because they are not intrusive and completely voluntary. Many of them include the full participation of labour. Sectoral structures have a loose structure and vary greatly from council to council. B.C. had a sector-based training fund in the mid-1990s. Despite some success, the program was seen as a business subsidy and soon cancelled. In both union and non-union establishments, employers and employees should be encouraged to work jointly on training.

Individual financial incentives. These kinds of incentives include tax credits, vouchers and individual training accounts – targeted, focused funds – and other incentives for workers in training programs. The U.S. and U.K. are already using these kinds of incentives, and Ottawa is looking into using training accounts. Such incentives could work on their own or along with other programs. Other support to individuals might be considered, such as a 'training allowance' for apprentices to supplement any EI support. Also, another key incentive in certain occupations would allow for tax deductions for the high-cost tools and equipment that apprentices and other trades and technical workers must purchase.

Revised regulations. ITAC could amend its policies to make it easier for employers to hire apprentices. The desire for such change varies by industry sector, therefore regulation revisions may have to be applied flexibly or on a pilot basis in certain sectors. For example, lowered apprentice-to-journeyperson ratios and added flexibility around apprentice/trainee wages have been suggested. In sectors that don't use apprentices, newer, more flexible policies for training could be adopted. Obviously,

ITAC, business, labour and government have to work together to develop policies that support existing training programs. These changes would have to be implemented in a way so that quality and fairness is maintained while training is increased. Some of the above ideas could be piloted in a few industries or trades.

More responsive, flexible and effective training. ITAC and its training partners could make greater use of modular training, competency-based instruction, computer-based training, and other e-learning formats. Not only could this provide more efficient training, it can increase access and reduce costs to employers and workers.

There are other changes in training programs that increase employer and worker participation. For example, the duration of existing and new trades and technical programs could be shortened, and/or converted into smaller, laddered credentials. While many employers, particularly small businesses, see this as necessary flexibility, some employers and labour see this as threatening the integrity of trades quality and 'de-skilling'.

Other examples of flexibility include the broader application of prior learning assessment and recognition (PLAR) models and development of 'transferable skills'; and special measures to improve retention and completion of trades and technical training programs.

The 'responsiveness and flexibility' goal will also need to be supported by public and private post-secondary institutions responding with appropriate program, delivery and curriculum changes.

Public and private capital construction. Government could encourage employers to use capital projects as a training ground for new workers. Businesses involved could set voluntarily work-based training targets. This strategy would let the public sector lead by example by taking a greater role in work-based training. One drawback is that these projects may not last long enough for a worker to finish an apprenticeship. Another part of a public sector strategy would be for large crown corporations and other employers in the broad public sector (e.g. colleges and universities, hospitals, municipalities, schools) to take on more apprentices and technical workers.

Collective Agreements. Employers and unions negotiate collective agreements, and other groups cannot interfere with that process. However, business and labour may agree to look for ways of encouraging work-based training and making it a higher priority in negotiations.

Another factor in increasing trades and technical training is for government to use more of its post-secondary funding for work-based training programs recognized by industry. With the creation of ITAC, the provincial government has provided proportionately more funding for industry training and apprenticeship. Related to this, ITAC and institutions must lever more funding from industry and workers.

Each one of these options outlined above requires further research, consultation and analysis. Some of them would require working with the federal government (e.g. tax changes). Based on preliminary discussion, they appear to be the ones that stand the best chance of receiving employer buy-in and business-labour consensus.

This paper has attempted to list the most plausible public and private options above. There are other options supported by business or labour or sectors within either that strongly advocate options that are problematic to others. For example, some labour groups and unionized employers believe strong compulsory certification or a training tax or levy-grant scheme would increase necessary training. On the other hand, many business groups are pushing for lower apprentice-to-journeyperson ratios, shorter trades programs and modularized credentials.

This paper does not take a position on who may be right or wrong, but that if these more controversial measures are considered, policy-makers and industry must work together to attempt to find solutions that will work for all stakeholders.

7. *Next steps to address trades and technical skill shortages*

Leaders of B.C.'s business and labour groups, the provincial government and ITAC are committed to taking action *now* on skills shortages. Training and human resource development must be treated as an investment by businesses, workers and government and a long-term commitment is required.

Doing something concrete to avert harmful skill shortages in trades and technical occupations will require employers, workers, government, and educators and trainers to work toward shared objectives as much as possible. There may be sectors where employers (e.g. high tech) or unions (e.g. film and motion picture) have to assume more of a leadership role.

MODELLING BEST PRACTICES

There are some excellent examples of this type of commitment that can be modelled or expanded upon by industry groups:

- The ITAC/MTU/Machinists'/BCIT partnership on employee training.
- The Aerospace Industries Association of BC's initiative to identify its skill needs and develop strategies to meet them in conjunction with ITAC, education providers and government.
- *Discovery to Apprenticeship*-Acro Aerospace partnership to retrain workers from other industries for trades in advanced manufacturing of aerospace equipment.
- The ITAC/BC Technology Industries Association *Critical Skills Task Force*.
- The Ministry of Education/ITAC/Software Human Resource Council/Kelowna School District *Software Apprenticeship* Pilot.
- The Joint Management/Labour Training Boards in the construction industry which plan and deliver innovative apprenticeship and skills upgrading.
- The Vancouver Island Advanced Technology Centre's *Tech@Work* pilot.

- Skills Canada annual trades and technology competitions and promotional/awareness events.
- College and institute *Quick Response Training* programs throughout the province.
- B.C. industries' participation in successful national sector human resource councils.
- Several excellent union training schools and accredited private institutions which provide trades and technical to thousands of workers.

These constituencies are each considering what they can and should do in the short-term, and over the long-term, to support employers hiring and training more apprentices and other workers in both traditional and emerging sectors. Some of the public and private options put forth in the previous section of this paper require more analysis, thought and consultation before taking action. Therefore, the next steps are of two categories: short-term actions that can be taken in the next six months; and projects that lead to action over the longer term (i.e. the 18 months).

These next steps are summarized in a table on the next page. In order to successfully address the skill shortage problem, the following actions need to be seriously adopted by each stakeholder. The actions must result in more than additional studies, pilots and 'process'.

WHAT CAN BE DONE IN THE SHORT-TERM AND IN THE LONGER TERM?

What can ITAC and its four partner constituencies do to address trades and technical skill shortages?

What can ITAC do...	
... in the short-term?	▸ Continue policy research and labour market analysis to define skill shortage priorities. ▸ Bring groups together within industry sectors to develop and implement sectoral training strategies. ▸ Make linkages with national groups to promote awareness and action. ▸ Cost-share training strategies, designate new trades & occupations, and promote awareness about the skill shortage problem. ▸ Work closely with training providers to develop new models. ▸ Develop public policy proposals for increasing non-government investments in training. ▸ Expand prior learning assessment and recognition in existing and new trades and occupations to reduce barriers to entry. ▸ Adopt more flexible program and service delivery practices. ▸ Implement an employer marketing strategy to promote investment in apprenticeship and other training.
... in the long-term?	▸ Increase the proportion of industry training and apprenticeship funded by employers, workers and others. ▸ Increase the proportion of training delivered via e-learning and other flexible methods. ▸ Operate as industry-driven and responsive and flexibly. ▸ Continue to pursue its goal of 50,000 training spaces by 2005.

What can business do....	
... in the short-term?	▸ Make skill shortage training a part of the mandate of industry associations. ▸ Clearly identify short and long term training needs. ▸ Consider special strategies for small businesses and regional employer needs. ▸ Develop sectoral councils and strategies to tackle this problem. ▸ Work with unions and workers to make training and the hiring of youth a higher priority in negotiations. ▸ Champion and promote trades and technical careers.
... in the long-term?	▸ Develop and implement a long-term strategic plan to address skill shortages. ▸ Set and publish training targets for increasing apprenticeships & training to meet industry needs.
What can workers and organized labour do....	
... in the short-term?	▸ Work with employers on sector training strategies and developing sectoral councils. ▸ Negotiate flexible training provisions, and more training emphasis, in collective agreements. ▸ Agree to more apprenticeships and other trainee spaces for youth. ▸ Promote more public-private sector training partnerships.
... in the long-term?	▸ Develop and implement a long-term strategic plan to address skill shortages. ▸ Work with labour federations and other partners to promote trades and technical careers and training.

What can educators and trainers do....	
... in the short-term?	▸ Respond to needs of, and provide input into ITAC, business and labour strategies. ▸ Develop a long-term training plan with ITAC and industry groups. ▸ Work with ITAC and industry to expand existing and new trades and occupational designations and credentials. ▸ Expand business-education partnerships in trades and technical training.
... in the long-term?	▸ Expand flexible training and e-learning models for trades and technical training. ▸ Pursue public-private trades and technical training partnerships. ▸ Champion trades and technical training.
What can the provincial government do....	
... in the short-term?	▸ Make trades and technical training and ITAC support a priority in the 2001/2002 budget. ▸ Provide innovative incentives for employers to hire apprentices and trainees. ▸ Work with ITAC to develop new public policy measures to increase training investment. ▸ Integrate trades and technical career awareness and training into K-12 programs and system. ▸ Consolidate youth and industry training programs across ITAC. ▸ Initiate a public sector apprenticeship and training strategy.
... in the long-term?	▸ Implement new public policy measures to increase industry training and apprenticeship investments.

... in the long-term?	▸ Influence federal immigration policy to reduce barriers to trade/occupational entry. ▸ Influence the federal government to make appropriate tax and income support changes. ▸ Link government training strategies for EI and BC Benefit clients with ITAC goals.

We cannot ignore the role of the federal government. Our provincial government needs to work with ITAC and industry to influence federal public policies and programs in line with the measures advocated in this paper, particularly those options that have a tax component, relate to EI support, or are of national economic and labour market signficance.

While this paper focuses on employer and worker actions, parents, and school teachers and counsellors should be encouraged and helped to ensure that young people are aware of the tremendous career opportunities in trades and technical jobs.

The media in B.C. also plays a vital role in bringing this issue into the forefront of British Columbians' minds and, in promoting 'best practices' among business, labour, government, educators and ITAC to address the impending crisis.

Stimulating Action

The intention of ITAC in publishing this report is to follow it up with an implementation of concrete actions and monitoring to work with business, labour, government, and education and training groups to follow through on their commitments to address trades and technical shortages in B.C.

Therefore, facilitated by ITAC, an action plan released in conjunction with this report, and includes the following:

- Following a timetable in the short term to consult with business, labour, education and training and other groups who have an interest and role in skill shortage solutions and who have not been directly involved in this paper.
- Setting and publishing key performance indicators that will be tracked and communicated broadly, showing progress on skill shortage and training needs.
- Initiating various sector-specific events to plan and implement human resource strategies.
- Publishing 'best practice' examples for others to learn from or build on.
- Establishing an annual industry training summit, with the first one to be held in September, 2001.

ITAC has started this by setting a target of increasing the number of British Columbians in its industry training and apprenticeship programs from 19,000 in 1998 to 50,000 in 2005. ITAC encourages its partner constituencies to set short and long term targets as part of its commitment to acting on skill shortages in trades and technical occupations. For example:

- Business could target the proportion of its payroll that is invested in employee training; or, as per the B.C. Business Summit, target the proportion of the adult workforce that participates in work-related training.
- Unions could set targets around numbers of new apprentices being agreed to within collective agreements.

- Education and training institutions could set indicators involving participation in trades and technical programs, and apprenticeships.
- The provincial government could set broad targets on proportion of funding allocated to high school and post-secondary trades and technical programs.

STAY TUNED...

ITAC has created a place on its website to invite public and industry input, to provide updates on the action plan, and to communicate key performance indicator progress (*www.learnandearn.bc.ca/whatsnew/press.htm*).

End Notes

[1] "Trades and technical occupations" for purposes of this paper, refer to occupations for which some type of formal skill development and certification is or can be provided, with particular focus on programs less in duration than (but often laddered with) post-secondary diploma or baccalaureate programs.

[2] See other related ITAC papers at www.learnandearn.bc.ca: *Work-Based Training: A Key to BC Prosperity*, by R.Kunin and P.Gallagher (2000); *Investment Options for Financing Work-Based Education & Training*, by K.Rubenson and H.Schuetze (2000).

[3] Part of the policy debate is that some employers do not believe there are skill shortages and that one cannot always assume every worker that retires will be replaced by other workers on a one-to-one basis.

[4] HRDC, COPS BC Unique Scenario, 1999.

[5] http://www.aett.gov.bc.ca/branches/ea/reports/swfresearch.pdf, 2000.

[6] These are programs such as apprenticeship, entry-level trades training, vocational and technical programs, co-operative education and internship models at the vocational and technical level, employer-sponsored and/or delivered employee trades and technical training, and other work-based or industry-based trades and technical training, skills upgrading, and secondary school apprenticeship, career programs, etc.

[7] For example, see Footnote 1 or *Learning in the Workplace: Training Patterns and Training Activities* (Gordon Betcherman et al.) in Transition to the Knowledge Society: Policies and Strategies for Individual Participation and Learning (edited by Rubenson and Schuetze, 2000).

[8] For example, see *Adult Education and Training Survey*, Statistics Canada, 1998; *Adults in Training: An International Comparison of Continuing Education and Training*, OECD (CERI), 1999.

[9] In some sectors, employers pay the wages and subsidize travel and living costs and apprentices.

Partner	Roles	Launch (March, 2001)	Short-Term Measures (April, 2001 – August, 2001	Long-Term Measures[1] (Sept., 2001 – June, 2002)
The Industry Training and Apprenticeship Commission will...	Overall facilitator of the plan Administer legislation Implement its strategic plan and 4 strategic priorities Quality assurance, designation, certification, standards,etc. Bring partners together Champion trades and technical training	1. Release of Skills Shortage report by ITAC 2. Distribution to media and interviews 3. Media relations 4. Distribution of report to major stakeholder groups 5. Offer to work with them 6. Create an interactive site on ITAC website for public/stakeholder feedback on the report and tracking of progress on the action plan and targets 7. Distribute to CAF, CCDA and national sectoral groups and other groups	1. Late April – ITAC completes analysis of policy measures, including tax options, federal implications, individual options 2. Late-April – ITAC completes analysis of baseline expenditures 3. Develop and submit proposal to government, in conjunction with industry, for a new Human Resource Investment Tax Credit and other possible other policy measures. 4. Implement other ITAC strategic plan priorities: New designations and credentialling Expansion of existing and new programs Implement hi-tech strategy and flexible delivery strategy Review ITAC policies to make more flexible Continue youth awareness strategy Continue ELTT-Apprenticeship review and implement short-term findings 5. ITAC plans with others an industry training summit	1. Hold first annual summit in conjunction with industry 2. Continue to implement ITAC strategic plan, particularly its four strategic priorities 3. Changes to be determined by results of #1, 2 and 3 in short-term 4. Consider and implement any possible changes resulting from the ELTT-Apprenticeship Review 5. Pilot changes in certain sectors, trades and occupations 6. Other – to be determined

[1] Long-term measures will evolve as a function of implementation of immediate and short-term actions.

Partner	Roles	Launch (March, 2001)	Short-Term Measures (April, 2001 – August, 2001	Long-Term Measures (Sept., 2001 – June, 2002)
ITAC encourages Industry (Business and Labour) groups to...	Identify needs & priorities Drive training process (development, delivery, followup) Work within and across sectors Employer-union cooperation Champion trades and technical training	1. BCBC, Coalition and BCFed leaders participate in release of report 2. BCBC, Coalition and BCFed each brief other business and labour groups, respectively as appropriate 3. Provide input into ITAC's research project on long-term policy options 4. Consider and analyse possible quantitative targets for increasing number of apprenticeships and other training spaces	1. Contribute to proposal to government as above program. 2. Develop and implement sectoral plans, with ITAC support, for increasing hiring and training of apprentices, other trainees and workers 3. Factor training priorities into collective bargaining 4. Announce quantitative targets 5. Participate in planning first annual industry training summit	1. Participate in and play leadership role in the first annual industry training summit 2. Other – to be determined
ITAC encourages the Provincial Government (Advanced Education, Education, Labour) to...	Develop & implement effective public policies and funding Facilitate economic development, business investment, and individual prosperity Champion trades and technical training	1. Ministers participate in release of report 2. Provide input into ITAC's research project on long-term policy options. 3. ITAC Deputy Ministers brief other government DMs. 4. ITAC 2001/2002 budget shows a significant increase in order to meet long term goals and skills shortages 5. Consider and analyse possible quantitative targets for increasing trades and technical training	1. Increase funding for trades and technical training in B.C. 2. Announce new program to provide incentives for employers to hire more apprentices and other trainees in formal ITAC programs 3. Expand Student Works to increase employers hiring Secondary School Apprenticeship students 4. Assists in discussing strategies and recommendations with the federal government	1. Participate in first annual industry training summit 2. Other – to be determined

Partner	Roles	Launch (March, 2001)	Short-Term Measures (April, 2001 – August, 2001	Long-Term Measures (Sept., 2001 – June, 2002)
ITAC encourages Education & Training Providers (Public and Private) to...	Work with ITAC Be responsive to industry Develop industry partnerships Use flexible training programs and models Pursue public-private sector partnerships Champion trades and technical training	1. Participate in release of report 2. Provide input into ITAC's research project on long-term policy options 3. ITAC CEO and Education Board members brief other education/training groups (e.g. AECBC, SIOC, D&DTT, BCGEU, CIEA) as appropriate 4. ITAC brief BCCCA and PPSEC 5. ITAC brief MoE and key K-12 groups 6. Post-secondary and K-12 system and providers consider and analyse possible targets for increasing participation in trades and technical training programs	1. Expand trades and technical training for existing and new ITAC programs 2. Participate in ITAC's ELTT-Apprenticeship review and implementation of results 3. Expand flexible training and e-learning methods	1. Work with ITAC to designate new trades and occupations 2. Participate in first annual industry training summit 3. Other – to be determined

Abbreviations:
AECBC – Advanced Education Council of BC
BCBC – Business Council of BC
BCCCA – BC Career Colleges Association
BCFed – BC Federation of Labour
BCGEU – BC Government Employees Union
CAF – Canadian Apprenticeship Forum
CCDA – Canadian Council of Directors of Apprenticeship
CIEA – College-Institute Educators Association Coalition – Coalition of BC Business
D&DTT – Deans and Directors of Trades and Technical Training
DMs – Deputy Ministers
ELTT – Entry Level Trades Training Programs
ITAC – Industry Training and Apprenticeship Commission
MAETT – Ministry of Advanced Education, Training and Technology
MoE – Ministry of Education
MoL – Ministry of Labour
P&P – Planning and Priorities Standing Committee of the ITAC Board of Directors
PPSEC – Private Post-Secondary Education Commission
SIOC – Senior Instructional Officers Committee